

## **REMARKS/ARGUMENTS**

### **Claim Rejections – 35 USC 112**

In paragraph 2 of the Office Action the Examiner rejected claims 3-4 and 5-6 under 35 USC 112, second paragraph.

The Examiner stated that Claims 3-4 are vague and indefinite since all claimed components, i.e. carbon fibres, matrix, at least one electrically conductive material are all conductive materials, it is not clear what “conducting material” applicant is referring to. The Applicants have amended Claims 1, 3 and 4 to recite “conducting material which has a resistance lower than 200  $\mu\Omega$ .cm.” (Basis for this amendment can be found, e.g. at paragraph [0016].) Accordingly, the Examiner’s objection has been overcome.

The Examiner stated that in Claims 5-6 there is no antecedent basis for “the size of the particles.” Applicants have amended Claims 5 and 6 to overcome this ground for rejection.

### **Claim Rejections – 35 USC §102**

#### Paragraph 4

In paragraph 4 of the Office Action the Examiner rejected Claims 1, 7, 10 and 13-14 under 35 USC §102(b) as being anticipated by Gessinger et al (US 4707576). The Applicants respectfully traverse this rejection.

#### Claims 1, 7, and 10

In explaining her rejection the Examiner stated, “The arcing contact tips (6,8) is made from a carbon fiber reinforced graphite and a metal carrier (or matrix) (col 3 L 62).” However, the Applicants respectfully disagree with the Examiner’s characterization of Gessinger. The portion of Gessinger to which the Examiner refers (col 3 L 62) states that device is illustrated in

Fig. 2, and Fig. 2 shows Cr particles 26 applied to the surface of the graphite platelet 25 (col. 6, l. 65-66). This is entirely different from Applicants' device claimed in Claim 1 which includes a matrix (30,34) "which includes at least one electrically conductive material which has a resistance lower than  $200\ \mu\Omega\cdot\text{cm}$ ."

To state this in other words, Applicants' device includes a matrix having inset spaces shown as 32 and in Fig. 3, and inset spaces are filled with electrically conductive material such as copper, indicated as item 34 in Fig. 4.

Furthermore, the Applicants respectfully point out that the Examiner has mischaracterized Gessinger by implying that Gessinger's metal carrier is formed in a matrix. The word "matrix" is defined to mean a material in which something else is embedded or contained. However, in Gessinger, Cr particles are applied to the surface of his graphite platelet, not embedded in the graphite platelet. (col. 6, l. 65-66 of Gessinger)

#### Claims 13 and 14

Claims 13 and 14 are not anticipated by Gessinger for the same reasons Claims 1, 7 and 10 are not anticipated. Specifically, Claims 13 and 14 recite that a matrix (30, 34) which includes at least one electrically conducting material. In contrast, as explained above, Gessinger does not teach or suggest a conducting material contained in a matrix.

#### Paragraph 5

In paragraph 5 of the Office Action the Examiner rejected Claims 1 and 7-10 under 35 USC §102(b) as being anticipated by Swift et al (US 5599615). The Applicants respectfully traverse this rejection.

The Examiner stated, "Swift hinted that the graphite would be in the form of powder (if used) (col 6 L 14-15.)" The Applicants respectfully disagree with the examiner's

characterization of Swift. In fact Swift states:

Preferably, the nonmetallic fiber material is present solely in the form of fibers, not partially as powder. The use of only fiber and the absence of powder (such as graphite powder) improves the mechanical strength of the composite member since the powder occupies volume without providing strength. (Col. 6, ll. 11-17.)

Thus it is clear that Swift teaches the absence of graphite powder. Accordingly, Swift does not anticipate Applicants' claimed invention which includes graphite in the matrix.

Furthermore, Swift teaches a metallic matrix in which carbon fibers are placed. (e.g. Col. 7, ll. 27-42.) This is entirely different from Applicant's claimed device in which electrically conductive material is embedded in inset spaces formed in a primary matrix of graphite.

### **Claim Rejections – 35 USC §103**

#### Paragraph 7

In paragraph 7 of the Office action the Examiner rejected Claims 2-6 under 35 USC §103 as being unpatentable over Swift et al (US 5599615). The Applicants respectfully traverse this rejection.

Applicants' Claims 2-6 depend from Claim 1 and therefore are patentable at least for the same reasons as claim 1.

Furthermore, regarding Claim 2 the Examiner states that Swift does not teach that the carbon fibers are arranged in 3-D braiding but that that in view of Swift's teaching one would choose this claimed fiber arrangement. The Applicants respectfully disagree. Swift explicitly teaches that his carbon fibers are oriented substantially parallel to each other and are continuous from end to end. (Col 7, ll.27-32 and Figs 1-2) Therefore it would not be obvious to arrange the fibers in 3-D braiding as Applicants claim.

Regarding Claims 5 and 6, Applicants claim the electrically conducting material in

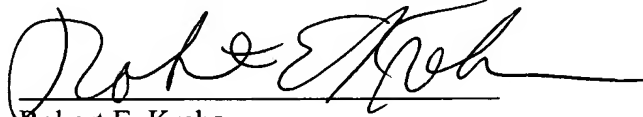
particulate form. However, Swift teaches that his metal is cast or molded. (Col. 34-42)

Favorable consideration and an early allowance of this application are earnestly solicited.

If the Examiner should be of the opinion that a telephone conference would be helpful in resolving any outstanding issues, the Examiner is urged to contact the undersigned.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Robert E. Krebs", written over a horizontal line.

Robert E. Krebs

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